

COMMITTEE ON SCIENCE
U.S. HOUSE OF REPRESENTATIVES

HEARING CHARTER

***Improving the Nation's Energy Security:
Can Cars and Trucks Be Made More Fuel Efficient?***

February 9, 2005
2:30 p.m. to 4:30 p.m.
2318 Rayburn House Office Building

Purpose:

On February 9, the Committee on Science will hold a hearing on the availability of technologies to improve fuel economy in cars and trucks and the potential for fuel economy improvements to reduce the nation's dependence on foreign oil.

The U.S. depends on imports to meet nearly 60 percent of its oil needs, much of it from troubled countries or regions of the world, including Nigeria, Venezuela, Russia, and the Middle East. The gasoline burned by cars and trucks accounts for about 45 percent of the nation's oil consumption. Total U.S. daily oil consumption is expected to rise from 20 million barrels today to 29 million barrels by 2025, mostly as a result of increasing consumption for transportation.

The hearing will focus on the pros and cons of tightening Federal fuel economy standards for cars and light trucks (known as Corporate Average Fuel Economy, or CAFE standards) and reforming the program as a way to reduce U.S. oil consumption and encourage the use of new technologies. But witnesses have also been asked to discuss more generally how the Federal government could promote the deployment of fuel-saving technologies. Other options include tax incentives, fuel taxes, and research, development and demonstration programs.

More specifically, the hearing will review and update the findings of the National Academy of Sciences on CAFE standards issued in 2002. The Academy report, which was commissioned by the Congress, concluded that the technology exists to significantly improve the fuel economy of cars and light trucks without reducing safety.

In December, the National Commission on Energy Policy, a bipartisan group of leaders from business, government, and academia that included experts in national security, energy, and the environment released a set of recommendations for U.S. energy policy. The recommendations included a call to raise CAFE standards to enhance the nation's energy security. The privately funded group was chaired by William Reilly, who was administrator of the Environmental Protection Agency (EPA) under President George H.W. Bush, and John Holdren, the Teresa and John Heinz Professor of Environmental Policy at Harvard University.

The Committee plans to explore the following overarching questions at the hearing:

1. To what extent can improving fuel economy in cars and trucks improve the economic and energy security of the nation?

2. What technologies are available or will soon be available to improve fuel economy in cars and trucks? How much could these technologies improve fuel economy without compromising safety or the economy?
3. What policy options are available to Congress to encourage the adoption of automobile efficiency technologies? What are the advantages and disadvantages of each?

Witnesses:

1. **William Reilly** co-chaired the National Commission on Energy Policy, which in December released a report entitled, *Ending the Energy Stalemate: A Bipartisan Strategy to Meet America's Energy Challenges*. Mr. Reilly is founding partner of the investment firm Aqua International Partners and was the Administrator of EPA under President George H.W. Bush.
2. **Paul Portney** was chairman of the National Academy of Science's Committee on the Effectiveness and Impact of Corporate Fuel Economy (CAFE) Standards, which authored the 2002 report. An economist, he is the President of Resources for the Future, a D.C.-based energy and environmental policy research institute.
3. **K. G. Duleep** is Transportation Managing Director of the energy and environmental consulting firm Energy and Environmental Analysis, Inc. He is an internationally recognized expert on vehicular fuel economy and emissions issues. He has been involved with automotive technology, fuel economy, and emissions issues for over 20 years
4. **Michael Stanton** is Vice President of Government Affairs at the Alliance of Automobile Manufacturers, a trade association representing the BMW Group, DaimlerChrysler, Ford Motor Company, General Motors, Mazda, Mitsubishi Motors, Porsche, Toyota, and Volkswagen.
5. **David Greene** is a Corporate Fellow at the National Transportation Research Center, Oak Ridge National Laboratory. He has spent 25 years researching transportation and energy policy issues.

Issues:

- **Has the Corporate Average Fuel Economy (CAFE) law worked?** Congress created the CAFE program in 1975 after the Arab oil embargo, which resulted in a tripling of the price of oil in the early 1970s. Average new car fuel economy rose from 12.9 miles per gallon (mpg) in 1974 to 27.6 mpg in 1985 – slightly more than the 27.5 mpg required by the CAFE standards that year. (The average for new light trucks, the category that now includes pickups, SUVs and minivans, rose to 19.5 mpg over the same time period.) Today, the standards stand at 27.5 mpg for cars and 21.0 mpg for light trucks.

Experts argue over the extent to which the increase in fuel economy in the 1970s and 1980s can be attributed to CAFE or to high fuel prices. Some say that the sudden hike in prices in the 1970s and the threat of competition from Japanese automakers (who were entering the U.S. market with more fuel efficient cars) were the predominant forces driving the increase in domestic fuel economy. But the National Academy of Sciences panel concluded that CAFE standards have played a leading role in preventing fuel economy levels from dropping as much as they otherwise would have as fuel prices declined in the 1990s, and that fuel use by cars and trucks today is roughly one-third lower than it would have been had fuel economy not improved since 1975.

Experts also argue whether, regardless of their effectiveness, CAFE standards are the most efficient and effective way to increase fuel economy.

- **Why has the fuel economy of new vehicles been on a downward trend since 1987?** The average fuel economy of new vehicles sold in the U.S. has declined since reaching a peak in 1987. The major reason is the explosive growth in SUVs, minivans, and pickup trucks, which must meet a fuel economy standard that is lower than that for passenger cars. The number of light trucks sold has more than tripled since 1980, while the number of passenger cars has declined slightly over the same period. Today more than half the new cars sold are light trucks. At the same time, CAFE standards have remained stagnant. The fuel economy standard for new cars has not changed since 1990. And until this year, the standard for new light trucks had not changed since 1996.

The fact that the average fuel economy has declined since 1987 does not mean that no new cars or light trucks use newer, more fuel-efficient technologies. But any improvements in fuel economy in a particular model have been offset by declines in fuel economy in other models (or by increased sales of models with lower fuel economy), allowing the average – which is based on sales of all makes and models – to drop. Proponents of CAFE standards argue that government action is the only way to raise the average by pushing improvements across automakers' fleets.

Automakers point out that they have made cars and trucks more efficient, pound for pound, in recent years. They note that they have significantly increased the power and size of vehicles without much change in fuel economy. And they argue that customers prefer power, size and luxury over fuel efficiency. As a result, average vehicle weight has increased by 24 percent since 1981 and average horsepower has increased by 93 percent.

- **Does the technology exist to improve the fuel economy of cars and trucks?** The National Academy of Sciences report identified 14 technologies that were readily available in 2002 to improve the efficiency of automotive engines, transmissions, and overall design (such as a vehicle's aerodynamics and rolling resistance). The Academy also identified nine emerging technologies, some of which had already been introduced in European or Japanese markets, but not in the U.S.

The Academy concluded that the technologies it identified, in combination, would allow fuel economy increases of 12 to 27 percent for cars and 25 to 42 percent for light trucks without any reduction of safety. (The technologies would also pay for themselves in fuel savings, the Academy found. See attachment.)

The Academy did not include hybrid vehicles among the technologies it identified because they had just been introduced into the American market when the Academy conducted its study. Sales of hybrids have continued to grow since the Academy issued its report. The National Commission on Energy Policy report, released late last year, found that the ability of hybrid technologies to make substantial improvements in fuel economy has been clearly demonstrated.

Automakers question whether consumers will be willing to pay for efficiency technologies. Even if the technology pays for itself in gasoline savings over the life of the vehicle, they say, many consumers do not consider those kinds of long-term benefits when choosing a vehicle.

- **Can fuel economy be improved without eroding passenger safety?** The relationship between fuel economy and safety is fiercely debated. Even the National Academy of Sciences panel was split on this issue. A majority found that when automakers in the 1970s and 1980s made vehicles more efficient by making them smaller and lighter, they also likely increased the number of crash fatalities by several percent. (Two members of the panel believed the relationship between weight, size and safety to be too uncertain to determine whether any additional casualties occurred due to fuel economy improvements during that time.)

The Academy panel concluded unanimously, however, that fuel economy could be increased in the future without any detriment to safety. The Academy said that the technologies it had identified for improving fuel economy would not reduce safety and could even increase it. The panel also called for a reduction in the weight of the heaviest vehicles in the light truck category as a way to increase safety and fuel economy simultaneously. The Academy found that if the weight and size of the heaviest vehicles, particularly those over 4,000 pounds, were reduced, vehicle safety would improve by reducing the damage caused by those vehicles in crashes.

- **Would raising fuel economy standards disadvantage domestic manufacturers?** The National Academy of Sciences report concluded that CAFE regulations could have different effects on different manufacturers, but that those effects could be minimized. The sales and especially the profits of General Motors, Ford, and the Chrysler division of DaimlerChrysler, are much more dependent on light trucks than are their competitors. If fuel economy standards were raised for light trucks, but not for cars, U.S.-based companies would likely suffer. (This assumes that redesigning light trucks to improve fuel economy would either raise the prices of the vehicles, driving customers away, or require automakers to absorb some of the costs of redesign, eating into profits.) Conversely, if standards were raised for cars only, U.S.-based companies might be advantaged. But fuel economy increases in light trucks would produce greater oil savings.

To minimize the costs of improving fuel economy, both the National Academy of Sciences and the National Commission on Energy Policy recommended reforming CAFE regulations to allow manufacturers to trade fuel economy credits with one another in much the same way that electric utilities trade pollution allowances. Under such a system, an automaker that could not improve its average fuel economy to the extent required by CAFE standards could purchase credits from an automaker that had exceeded CAFE standards. (The government could also sell credits.) Tradable CAFE credits would give manufacturers an incentive to exceed the standards since they could then sell the credits to others. And it could minimize the overall cost of the program by ensuring that the auto industry as a whole made the most economical improvements in fuel economy.

Even under a CAFE program that allowed tradable credits, however, domestic automakers, which sell the largest and least fuel efficient vehicles, would likely have to invest the most, either in purchasing credits from other manufacturers or in developing fuel efficient technologies.

That is one reason why the National Commission on Energy Policy further recommended that an increase in CAFE standards be coupled with a tax incentive program to encourage the domestic production of vehicles with fuel efficient technologies like hybrid and diesel technologies.

The Academy also recommended that Congress eliminate the separate categories for cars and light trucks. That would enable CAFE standards to allow automakers more flexibility because they could meet a single CAFE standard for their entire fleet in more ways. An automaker could choose to meet a tighter CAFE standard either by improving the fuel mileage of cars or light trucks or both. However, eliminating the current categories would likely severely disadvantage U.S.-based automakers because their fleets are so weighted toward light trucks that the bulk of any fuel economy improvements would still have to be made in that class of vehicles. However, new categories based on weight, size or horsepower, might go a long way toward leveling the playing field.

- **How would higher fuel economy standards likely affect workers in the automotive industry?** The National Academy of Sciences panel believed that fuel economy standards could be raised without negative consequences on employment if the increase were implemented with enough lead-time. Even existing technologies, the report said, could take four to eight years to penetrate the market.

The Academy panel pointed out, however, that larger scale trends have a much greater effect on employment than do CAFE standards. Employment in the auto industry increased from little over 600 million in the early 1980s to over one million in 1999, largely because of foreign-owned companies' decisions to build manufacturing plants in the U.S. Over the same time period, however, organized labor lost almost half of its members due to the domestic manufacturers' improvements in automobile production, shifts of parts production overseas, and loss of market share to foreign-owned manufacturers. (Workers in their plants, even those in the U.S., generally are not unionized.)

The National Commission on Energy Policy argued that its recommendation for tax incentives for the domestic production of hybrid and diesel vehicles would help staunch this flow. The Commission argued that some jobs would be lost in any event as foreign manufacturers expand their efforts to introduce hybrid and diesel vehicles in the U.S. market. But the Commission calculated that its tax incentives would result in about 25 percent fewer jobs being lost.

- **How much oil would an increase in fuel economy save?** According to the National Commission on Energy Policy, improving car and light truck fuel economy by 10, 15, and 20 percent by 2015 would result, by 2025, in an estimated fuel savings of approximately 2, 3, and 3.5 million barrels of oil a day respectively. Such savings represent a 25 to 40 percent reduction in the additional amount of oil by which U.S. demand is currently projected to grow by that time, absent other policy interventions.

Background:

Origins of the CAFE Program

The early 1970s saw the price of oil triple, an increase precipitated by an embargo orchestrated by the oil cartel OPEC (Organization of Petroleum Exporting Countries). The crisis threw into stark relief the fuel inefficiency of U.S. manufactured automobiles, and consumers began switching to relatively fuel efficient imported vehicles. Congress passed the Energy Policy and Conservation Act in 1975 with the goal of reducing the nation's dependence on foreign oil, which established, among other things, the Corporate Average Fuel Economy (CAFE) program to raise the fuel economy of the U.S. fleet.

The CAFE program requires the fuel economy of an automaker's entire product line of cars and light trucks sold in the U.S., averaged across all models and weighted by sales, to meet a miles-per-gallon level set by the government. Under the 1975 law, Congress sets the target for passenger cars, which rose from 18 mpg in 1978 to 27.5 mpg in 1990, where it remains today. Congress delegated the authority to set fuel economy standards for light trucks to the National Highway Transportation Safety Administration (NHTSA). Light truck standards rose from 17.5 mpg in 1982 to 20.7 mpg in 1996. Beginning this year, the standard for light trucks is to rise gradually to 22.2 mpg in 2007. The increase this year is the first since 1996, in part, because language added to appropriations bills forbade NHTSA from raising the standard between 1996 and 2000.

When Congress created the CAFE program, light trucks accounted for a small portion of vehicle sales and generally included trucks used on farms or at construction sites. According to the Congressional Research Service, the number of new passenger cars sold each year in the U.S. has decreased somewhat since 1980, but the number of light trucks sold has more than tripled, from 2.2 million in 1980 to 8.7 million in 2001.

Domestic manufacturers still dominate the light truck market, but their share has declined from 86 percent in 1993 to less than 77 percent in 2002 as foreign automakers have aggressively targeted this popular sector of the U.S. market, focusing on somewhat smaller, more fuel efficient models.

Recent Actions

In 2003 NHTSA issued a final rule to boost the CAFE standard for light trucks by 1.5 miles per gallon by 2007. NHTSA estimates that the increase will save approximately 75,000 barrels of oil a day between 2006 and 2012, or less than 0.4 percent of current consumption.

In 2003 NHTSA also issued an Advance Notice of Proposed Rulemaking inviting comments on a wide variety of potential ways to change the CAFE program to address a number of criticisms that have been made, including those made by the National Academy of Sciences panel. For example, NHTSA has invited comments on whether it ought to discard the distinction the program makes between cars and light trucks (which would require a statutory change); establish separate fuel economy standards for various classes of light trucks based on weight, size, or some other attribute; or extend fuel economy standards to light trucks weighing up to 10,000 pounds (since such vehicles are currently not subject to fuel economy standards). NHTSA has set no date for when it might propose actual reforms based on these comments.

Questions Asked of the Witnesses:

The witnesses were asked to address the following questions in their testimony:

Mr. Reilly:

Please describe the Commission's recommendation to improve fuel economy (particularly those related to Corporate Average Fuel Economy (CAFE) Standards), and address the following questions:

1. What are the expected economic and energy security benefits from reducing the nation's dependence on oil? If we are to reduce our dependence on oil, how important is it to improve the fuel economy of cars and light trucks?

2. What effect would your recommendations have on the relative competitiveness of American and foreign-owned automobile manufacturers, on American workers in the automotive industry and on automotive safety?

Mr. Portney:

Please describe the findings of the Academy report, with particular emphasis on the following questions:

1. Have Corporate Average Fuel Economy (CAFE) standards been effective at saving the country oil?
2. How much of an increase in fuel economy did your panel find was technologically possible? How much did you find could pay for itself in gasoline savings to the consumer?
3. To what extent could the technologies to improve fuel economy described in the report be adopted without eroding safety?
4. What are the Academy report's recommendation's for improving the CAFE law?

Mr. Duleep:

1. What technologies are available now or are emerging that provide the best opportunities for automakers to boost fuel efficiency? How much could they improve fuel economy?
2. What are the prospects that hybrid technologies and diesel vehicle technologies, in particular, will achieve a large degree of market penetration? How much could they contribute to improving overall fuel economy?
3. To what extent can any of these technologies be used to improve fuel economy without eroding safety?
4. What steps could the government take to accelerate market penetration of these technologies?

Alliance for Automobile Manufacturers Representative:

1. Do you agree with the findings of the National Academy of Sciences regarding the availability and performance of technologies to increase fuel economy?
2. What potential do hybrid technologies and new diesel technologies have to reduce fuel consumption?
3. Do you believe that the U.S. should reduce its dependence on foreign oil? If so, what steps should the government take to accomplish this?
4. What do you believe is the best way the government can encourage greater adoption of technologies to improve fuel economy?

Dr. Greene:

1. What are the policy options for encouraging the adoption of fuel efficient technologies in the marketplace and the advantages and disadvantages of each?
2. Can the government encourage the adoption of technologies to improve fuel economy without leading automakers to make vehicles less safe?
3. Can the government encourage the adoption of technologies to improve fuel economy without giving any individual automaker a significant advantage?